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Virginia Locates New Urban Forest Benefits

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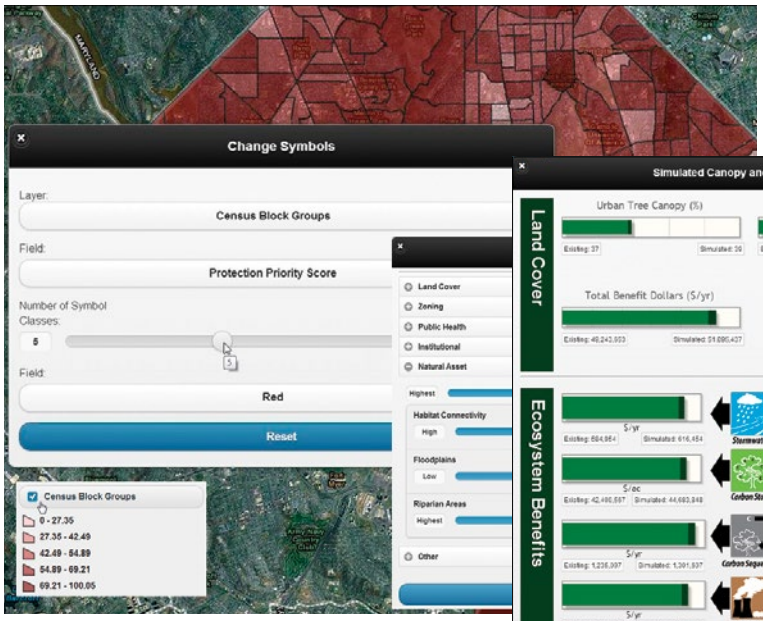
Nearly 30 communities in the state of Virginia have conducted Urban Tree Canopy (UTC) assessments, using aerial imagery to map trees and other land cover to evaluate current resources; prepare for changes from development and disturbance; and plan healthy, sustainable urban forests.

State officials wanted people to be able to use the data, so they asked Plan-It Geo to host a UTC data web mapping application for several Virginia cities. Plan-It Geo launched the Urban Forest (UF) Cloud in ArcGIS Online. UF Cloud provided an accessible, affordable, and configurable platform for deploying a suite of browser-based applications. It meets the needs of Virginia communities, including Lexington, Newport News, Virginia Beach, and Woodstock.

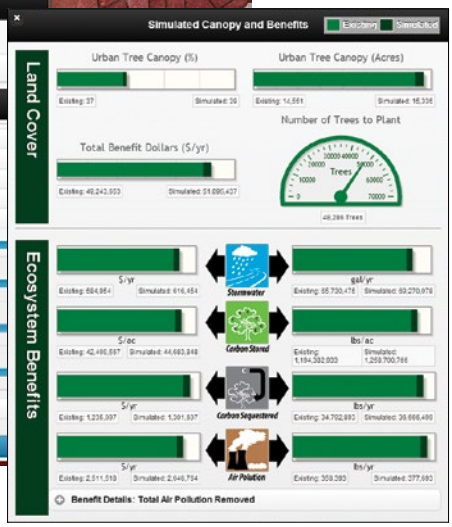
Built on ArcGIS, the service provides urban forest planning, analysis, and tracking tools. This collaborative project involved partners from the Virginia Department of Forestry, Virginia Tech, and funding and support provided by the US Department of Agriculture (USDA) Forest Service. In addition, i-Tree software (itreetools.org) was used to quantify urban forest ecosystem service values using local studies. These values were incorporated into back-end databases and analysis tools.

Numerous data was prepared for the web map including zoning and ownership, census, riparian corridors, floodplains, public facilities, road networks, and growth boundaries. To connect land-use planning with urban forest management, contiguous zoning districts were chosen as the basis for analysis. Based on a statewide survey of UTC planning needs, Plan-It Geo deployed these tools:

- Prioritize Canopy—This tool weights criteria by using slider bars to calculate Priority Planting Scores or Priority Protection Scores for zoning polygons. These are thematically displayed to visualize priority landscapes for restoration.
- Simulate Canopy—Users spatially model gains or losses in UTC to quantify impacts such as tree counts and ecosystem services. Analysis can be either citywide or narrowed to select zoning polygons. A query and filter tool can be used to simulate impact, such as 20 percent tree cover only to residential areas with less than 10 percent UTC.
- Canopy Tracker—Managers map and describe planting or restoration projects, forest losses, or areas for canopy protection.
- Update Metrics—Managers can keep land-cover metrics current and accurate (e.g., remove sports field areas from a zoning polygon to exclude them as possible planting areas).
- Tree Plotter—This is a fully functioning tree inventory application for managing new and established trees and maintenance work history on public and private property.



↑ The Prioritize Canopy tool scores zoning areas for their tree planting or canopy protection potential based on user-defined criteria weighting.



↑ A demonstration of the Simulator tool in a commercial zoning polygon with low tree cover in Newport News, Virginia

- Dashboard—A browser dynamically summarizes tree inventory and canopy data from the tools, providing a snapshot of key statistics and charts/graphs for managers, the public, and elected officials. Dashboard includes a canopy calculator goal-setting tool linked to the spatial data.

Beyond map navigation and search tools, users can change layer symbology (e.g., color zoning polygons by their priority planting score), filter features by field attributes (e.g., location priority riparian restoration areas on public lands), and export data to a desktop file. Additionally, the public can view the map layers through a guest login to see trends in development, canopy distribution and losses, planting events, and trees planted.

UF Cloud applications are built using Esri's ArcGIS API for JavaScript, jQuery, and HTML5 incorporating data from multiple sources including ArcGIS Online basemaps and clients' ArcGIS for Server and ArcGIS Online accounts.

Find more information about Plan-It Geo at www.planitgeo.com and about Urban Forest Cloud by logging in to pgonline.planitgeo.com/VA/.

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